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Royal Veterinary College.

Rebuilding Fund.

In our editorial columns will be found an appeal to our readers to support the Fund which has been started for the purpose of reconstructing the buildings of the Royal Veterinary College, Camden Town.

The following is a copy of a letter which the Earl of Northbrook, as Chairman of the Governors of the College, has sent to the general Press of the country :—

Sir,—The Governors of the Royal Veterinary College are faced with the absolute necessity of rebuilding the existing premises in Camden Town, and I hope that you will allow me space in your columns to represent how strong and urgent is their claim upon the generosity of the public in this connection.

Before the year 1791, veterinary science was non-existent in this country, and the fact that there was in the United Kingdom no school for the study of animal diseases and no authority charged with the duty of collecting and co-ordinating information already acquired as to the cause, treatment, or prevention of such diseases, prompted the foundation in that year of the Royal Veterinary College, which was empowered to grant Diplomas to students of proved efficiency.

For the funds required to provide a site, to defray the cost of building, and to pay the salaries of the Professor and his assistants, the College, during the first four years of its existence, relied solely on private donations and subscriptions. Although, in 1795, Parliament, in recognition of the national character of the work undertaken by the Institution, made an annual grant of £1,500, this grant was unfortunately withdrawn about the year 1815.

From its very foundation, however, the College has continued to develop, and to carry on a work of inestimable importance to the agricultural community and other classes of the public, in that it has been the principal source from which veterinary surgeons have been supplied to the country. The enlargement, from time to time, of the teaching staff, and the provision of further teaching accommodation, have imposed a heavy strain upon the resources of the Institution, and have some time since compelled the expenditure of nearly the whole of the accumulated Funds. The gradual deterioration, through age, of the original buildings, has entailed an annually-increasing expenditure on repairs, and expenditure which is no longer justifiable in an economic sense.

While, in other European countries, veterinary science and veterinary colleges have received liberal support from the State in the past, it is no exaggeration to say that the Royal Veterinary College, while expected to carry out work of great national importance, has been left largely to its own resources. The Governors gratefully acknowledge the grant recently received from the Development Fund for the building and equipment of the Research Institute in Animal Pathology at the College. That money, however, was earmarked for research, and no part of it could be used to improve the condition of the buildings devoted to the education of students. This appeal, therefore, which has the warm commendation of our President, H.R.H. the Duke of Connaught, deserves the support of all those who have a material interest in animal husbandry. But it rests upon a wider basis than material interest. Advances in knowledge concerning animal diseases, and in veterinary education, make for the lessening of pain, through the prevention of disease, and through the introduction of more humane methods of treatment.

In this connection it may be incidentally mentioned that over 6,000 cases are annually treated in the Out-Patients' Department alone, and it should be realised that these afford invaluable opportunities for the education of students.

There has been sanctioned by the Lords of the Treasury a grant from the Development Fund, on a £ for £ basis, of a sum up to £35,000 in aid of our scheme of reconstruction. And it is computed, as a result of consultation with the most competent authorities, that, even with the exercise of strict economy, a sum of £50,000 must be forthcoming from other sources. To the public, therefore, I make this appeal on behalf of the Governors, confident that such never ceasing efforts in the past to provide highly-qualified veterinary surgeons and to assist the advance of veterinary science will bring their reward in a generous provision of funds so necessary if the good work is to continue, and, as we hope, to grow in the future.

Donations should be made payable to me, and addressed to the Royal Veterinary College, Great College Street, Camden Town, London, N.W.1.—Yours faithfully, Northbrook, Chairman.

The Royal Veterinary College,
Great College Street,
Camden Town, N.W.1.

How Safe is Alum?

"I have given large doses of alum, well diluted with water with the stomach tube, in overloading of the stomach with wheat to prevent laminitis as well as as a curative agent," writes O. W. Johnson, in *Chicago Veterinary Medicine*. "In subjects that have died, and on which I have performed an autopsy, I have found the alum collected in one place of the stomach, and in all instances the mucous membrane at this place was destroyed. Those horses which recover have not, to my knowledge, suffered any ill-effect from it, but it is logical to believe that at least a certain percentage of them, where healing does not occur immediately, may suffer from gastric ulcers. On account of this I now hesitate to administer this valuable drug for laminitis."

The Chemotherapy of Surra (*Trypanosoma evansi* Infections) of Horses and Cattle in India.

By J. T. EDWARDS, D.Sc., M.R.C.V.S., Director, Imperial Institute of Veterinary Research, Muktesar, Upper India.

The following is a summary of a very complete and exhaustive paper read by Dr. Edwards at the Royal Society of Tropical Medicine and Hygiene, London, on the 20th May, 1926, on "Experiments Planned in Order to Discover an Effective and Cheap Treatment for Surra Easily Applicable in the Field." Work in this direction was commenced in 1922 and is still in progress. Deductions drawn from the observations hitherto made are, hence, to some extent provisional. Full report, however, will appear shortly in an official memoir. The paper, which is published in the July issue of the *Transactions of the Royal Society of Tropical Medicine and Hygiene*, is arranged under the following headings :—(*a*) Treatment of equine surra with "Bayer 205"; the dosage of "Bayer 205"; toxic symptoms after "Bayer 205"; intrathecal injection of "Bayer 205"; duration of peripheral sterilisation after the administration of single doses of "Bayer 205"; treatment with repeated doses of "Bayer 205"; combined intravenous-intrathecal administration of "Bayer 205"; the prophylactic action of "Bayer 205"; (*b*) treatment of surra with tartar emetic; the minimum lethal dose of tartar emetic for cattle; treatment of surra in buffaloes with M/10 (3·2 per cent.) solution of tartar emetic; treatment of equine surra with tartar emetic; the prophylactic action of tartar emetic; (*c*) treatment of surra with tryparsamide; treatment of surra in buffaloes with tryparsamide; lethal effects obtained with tryparsamide in cattle; treatment of equine surra with tryparsamide; (*d*) treatment of surra with bismuth compounds; treatment of surra in cattle with bismuth; treatment of surra in horses with bismuth; lethal effects obtained from administration of bismuth compounds; summary of results of prophylactic treatment with bismuth compounds.

SUMMARY AND CONCLUSIONS.

The work in progress upon the chemotherapy of trypanosomiasis, due to *Trypanosoma evansi*, would appear to warrant the following conclusions :—

(*a*) BOVINES. Outbreaks of surra in cattle, including buffaloes, which occasionally occur in India (with high mortality, particularly among buffaloes) are easily checked by the administration of injections intravenously of relatively simple trypanocidal agents, such as tartar emetic or bismuth phosphate. Single injections usually suffice. A suitable therapeutic dose of tartar emetic is a 5 c.c. of an M/10 (3·2 per cent.) solution, per 100 lbs. body weight. The treatment does not bring about a complete sterilisation of the system of trypanosomes, which persist thereafter in the system in a latent state of activity, apparently indefinitely. The results obtained after treatment with tryparsamide do not appear to be appreciably superior.

(*b*) EQUINES.

"*Bayer* 205." (i.) The results obtained by the application of "Bayer 205" surpass those obtainable by other medicaments.

(ii.) A suitable therapeutic dose for intravenous administration is 5 grammes, in 10 per cent. aqueous solution, per 1,000 lbs. body weight.

(iii.) The drug remains in the general circulation for a long time, apparently about two months, in sufficient concentration to exert a manifest trypanocidal action; hence, in species of such high susceptibility as the horse, which exhibits progressively increasing vulnerability with each parasitic relapse—in contradistinction to what transpires with the bovine species, which is usually able to defend itself after assistance from a chemotherapeutic agent in the course of virulent invasion—the lack of liability to the rapid excretion characteristic of the other trypanocidal agents employed (presumably attributable to its large molecular structure) is a property of great importance, and fortifies the patient in withstanding relapses, from "tissue backwashes," until the risk of such relapses disappears.

(iv.) The lack of diffusibility of the drug, however, operates adversely in one important respect, namely, in that it is unable to penetrate the subarachnoid space in trypanocidal concentration; hence, although prolonged sterilisation of the circulatory system may be effected by the administration of a single intravenous dosage, in well-established cases of infection the trypanosomes meanwhile multiply, as has been proved by experimental observations, in the safe retreat afforded by the cerebrospinal canal, and the animal may ultimately succumb from surra affecting purely the central nervous system. This defect may be counteracted by the introduction of "Bayer 205" simultaneously with the intravenous injection, intrathecally, in very dilute solution, in a dosage arithmetically equivalent to that introduced intravenously having regard to the relative weights (about 1 : 500) of the tissues affected by the introduction of the drug into the two channels. The intrathecal dose thus applied has been 20 c.c. of a 0·1 per cent. solution, per 1,000 lbs. body weight, injected, according to the methods described, through the occipito-atlantal space.* Intravenous treatment alone, especially if repeated in full dosage after a month's interval, is sufficient to bring about prolonged sterilisation in very early cases of infecton; curiously, in some of these cases invasion of the cerebrospinal axis had already occurred at the time of treatment.

(v.) The therapeutic dose of "Bayer 205" noted above may be safely introduced into the circulating blood when large numbers of trypanosomes are present in it; complete disappearance takes place after a prolonged interval, amounting to several hours, and thus the alarming symptoms set up by some other drugs due to rapid destruction of the parasites are not seen. Symptoms of drug intoxication, manifested notably in the form of locomotor disturbances closely simulating those of laminitis and urticaria, may appear

* See special account of operation of intrathecal injection.

following upon the intravenous injection, but these symptoms disappear after a few days, and are not to be feared. In some of our animals, the combined intravenous-intrathecal treatment has been repeated after a month's interval, in order to maintain the drug in trypanocidal concentration in the system for a longer period, to combat the possibility of relapse; this treatment has been quite successful, but the symptoms of drug intoxication appear to be more severe after the second injection, and the interference appears to be somewhat too drastic for horses in very low condition. The intrathecal injection has been repeated at shorter intervals (fortnightly) with perfect safety.

(vi.) Our experiments would seem to show that "Bayer 205" might be used with much advantage as a prophylactic agent, for the protection of horses exposed to surra in badly-infected zones. Intravenous dosage, at the rate of about 1 gramme per 1,000 lbs. body weight, repeated fortnightly, would appear to suffice. However, experimental evidence has been adduced indicating that trypanosome infection, developing in horses during a stage after injection when the drug is present in insufficient concentration to arrest multiplication completely, is distinctly less amenable to the effects of the drug than infection in horses not previously treated; the difference in effect would appear to be due to the acquisition of a notable degree of "drug-fastness" by the trypanosomes exposed to the sublethal concentrations of the drug. These observations would also lend further support to the view that, in therapeutic treatment, early intervention with the largest dosages capable of being supported by the infected animal is the method of treatment most likely ultimately to secure complete sterilisation, which again appears to be an essential condition for the establishment of a clinical cure in such a highly susceptible species as the equine species.

(vii.) There would appear to be no advantage in combining "Bayer 205" with other trypanocidal agents in treatment, as has been advocated by other workers; at any rate, our results as they stand in their present stage of observation would indicate that, where suitably administered, prolonged sterilisation can be obtained by means of "Bayer 205" alone. Our knowledge regarding the ready multiplication of persisting trypanosomes in the tissues of the horse gives us further cause for belief that the sterilisation has been complete, as the observation periods in many instances have extended much beyond the estimated duration of persistence of "Bayer 205" in the circulation.

(viii.) *Tartar emetic.* This antimony compound comes next in value to, though far behind, "Bayer 205." The prophylactic effect, *vis-à-vis* a subsequent injection with virulent blood, is a short one, hardly exceeding 24 hours after intravenous inoculation with dosages of 5 c.c. of an M/10 (3·2 per cent.) solution, per 100 lbs. body weight, thus indicating that the drug is excreted relatively quickly. In therapeutic treatment, the drug displays intense trypanocidal properties, and the dosage mentioned above, which can be safely tolerated by a healthy animal, when administered intravenously into a horse showing trypanosomes in its peripheral circulation, brings about disastrous results: the patient may be killed even before the termination of the injection; on examination of the peripheral blood the trypanosomes are also observed to have vanished, and hence it is presumed that death has been occasioned by the occlusion of the blood capillaries with dead trypanosomes, or, possibly, by the liberation of their toxic properties. In undertaking treatment with tartar emetic care has therefore to be taken in the initial administration of the drug, by cleansing the blood stream safely of massive parasitic infection, either (*a*) by commencing with very small doses of tartar emetic and gradually increasing the doses thereafter applied at frequent (daily or alternate day) intervals, until the maximum safely tolerated dose for the healthy animal is reached, or (*b*) by a preliminary intravenous injection with a less drastic trypanocidal agent, such as tryparsamide or "Bayer 205" (1 gramme per 1,000 lbs.), as has been adopted in experiments recorded in this paper. On account of its liability to relatively rapid excretion, the therapeutic dose must be repeated at frequent intervals, every day or every alternate day, as has been indicated by the experiments upon the prophylactic effect of the drug, until about ten or more such injections have been given. Apparently complete cure may be obtained by these means, as is illustrated by the records of one horse, in the early stage of infection and in good condition. Relapses may, however, subsequently arise, with intense cerebrospinal infection, as is illustrated by the records of another horse, more severely affected at the time of treatment. Again, in animals in low condition, or possessing an idiosyncrasy towards the effects of the drug, death would appear to result from the drastic nature of the treatment.

(ix.) *Bismuth Compounds.* These compounds would appear to have much the same (though somewhat less intense and distinctly less efficacious), action as the chemically related antimony preparations, studied in the form of tartar emetic. Their study was commenced, as it was believed that an alternation of treatment with the simpler known trypanocidal agents would enable us to circumvent the problem of drug-fastness, but the acquisition later of supplies of "Bayer 205" and the indications of preliminary general experiments determined us to devote our attention to the more concise channels of investigation that form the basis of the earlier conclusions.

(x.) *Tryparsamide.* This organic arsenical compound, which would seem to hold the field now with "Bayer 205" as the remedy that has given the most encouraging results in the treatment of human sleeping sickness, proved entirely disappointing in our hands. Workers with the human disease would appear to stress its remarkable property of diffusibility, which would render it capable of producing a distinct amelioration of the effects of infection within the cerebrospinal canal and, probably, would exercise a beneficial effect upon the glandular affection well-

Technique of the Operation of Intrathecal Injection in Equines.

Extracted from Dr. J. T. Edwards's paper on Chemotherapy of Surra of Horses and Cattle.

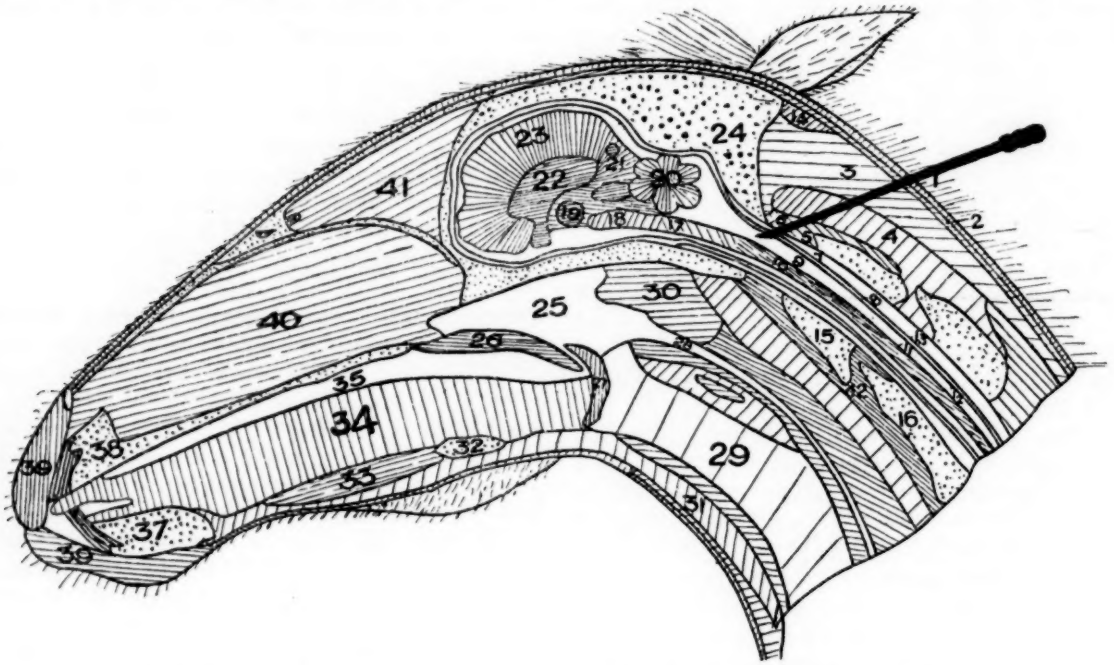

Diagram illustrating roughly anatomical relationships at site of intrathecal injection.

1. Skin.
2. Cervical panniculus.
3. Ligamentum nuchæ (funicular).
4. Rectus capitis super. major.
5. Rectus capitis super. minor.
6. Dorsal atlanto-occipital membrane.
7. Epidural space.
8. Subdural space.
9. Subarachnoid space.
10. The spinal cord.
11. Pia mater.
12. Arachnoid membrane.
13. Dura mater.
14. Cervico-auricularis muscle.
15. Atlas.
16. Axis.
17. Medulla.
18. Pons.
19. Thalamus.
20. Cerebellum.
21. Pineal body.
22. Corpus callosum.
23. Cerebral hemisphere.
24. Occipital bone.
25. Pharynx.
26. Soft palate.
27. Epiglottis.
28. Oesophagus.
29. Trachea.
30. Septum between guttural pouches.
31. Omo and sternohyoideous muscles.
32. Hyoid bone.
33. Geniohyoideous.
34. Tongue.
35. Oral cavity.
36. Hard palate.
37. Body of mandible.
38. Body of premaxilla.
39. Lip.
40. Septum-nasi.
41. Septum between frontal sinuses.
42. Rectus capitis inferioris.

known to workers with the human infection but unfamiliar to workers upon surra. The property of diffusibility measured in terms of rapid excretion was readily demonstrable in our experiments, as large dosages of the drugs failed to exhibit any distinct prophylactic effect *vis-à-vis* a virulent infection even when administered simultaneously. From the therapeutic standpoint, the rapid excretion of the drug would again appear to explain the inability of the drug to produce sterilisation for more than relatively short periods of time; and, again, on repetition of the treatment, relapses occurred with increasing frequency, indicating that the trypanosomes readily developed a striking degree of "drug-fastness" towards the substance. A property of importance in connection with the drug, however, is that it exercises a slow and certain lethal action upon trypanosomes in the circulating blood, analogous to that displayed by "Bayer 205"; hence it would seem that it might be employed with safety as a clearing agent prior to the application of repeated treatment with the more drastic trypanocidal agent, tartar emetic. The relatively high cost of the drug would also be a limiting factor in its application to the treatment of surra in horses. It is recognised that in the human subject, in which the reaction to trypanosome invasion assumes in natural circumstances a form very different from the acute, septicæmic picture presented by the equine subject, the properties peculiar to a drug such as tryparsamide may be of specific advantage. In some

of our experiments, tryparsamide was used for the intrathecal injection of infected subjects.

(xi.) *General.* Of the drugs studied, "Bayer 205" gave by far the most satisfactory results when administered alone, intravenously and intrathecally, in suitably large single initial doses, preferably repeated after a month's interval in the course of treatment of cases of surra corresponding in gravity with those most likely to be encountered in the field. The drugs studied may be regarded as "types" illustrative of the best materials hitherto evolved for the chemotherapy of trypanosomiasis, differing among themselves in certain important characteristics manifest to the clinician or pathologist. It is not unlikely that the chemist may be able in the near future to prepare substances possessing still more strikingly some of these, or even additional, characteristics. However, it would seem that those possessed by "Bayer 205" are in the direction of the most essential characteristics desired in a chemotherapeutic substance for the treatment of equine surra, namely, an assured toxicity, slow in effect, for the parasite, relatively low toxicity at the therapeutic dose for the host, and long retention in trypanocidal concentration in the system—connoting low diffusibility, with consequent lack of power to traverse the meninges and affect cerebrospinal infection, which last has to be overcome by direct intrathecal injection.

The method used for the operation of intrathecal injection in equines was as follows:—

The horse is, for a right-handed operator, cast on its right side and securely tied down, with its head towards its chest. An area of hair and mane is clipped just over the poll, and painted with tincture of iodine. A sterilised injection needle, about 6 inches in length and $\frac{1}{16}$ to $\frac{1}{8}$ inch in internal calibre with a well-made, firm, sharp point, is then thrust firmly and gradually through the mesial line of the poll, slightly deviating from the perpendicular downwards and forwards, at a distance of three to five inches (varying with the size of the animal) behind the occipital crest. The point of the needle is thus directed towards the occipito-atlantal space, and when it is estimated that the membrane closing the space is nearly reached (at a distance of about one and a half inches below the level of the skin), the needle is cautiously thrust onwards a short distance at a time, until ultimately, on awaiting a little after a propulsion, clear cerebrospinal fluid streams away from the outer orifice of the needle. Care is taken to withhold further propulsion or displacement of the needle, so as not to risk penetration of the medulla. In this situation the point of the needle will have traversed the dura mater and arachnoid membrane into the subarachnoid space (see Diagram on previous page), and the success of the operation would seem to depend largely upon the capacity of the needle point to traverse the delicate arachnoid membrane cleanly and immediately, without pressing it forward or lacerating it; hence, it is important to use highly polished, sharply ground, unworn needles for the operation. Should the needle point encounter firm resistance, usually the inferior extremity of the occiput, it is immediately withdrawn slightly and redirected somewhat more posteriorly. The operation should be capable of performance with safety by any careful operator after a little practice.

Cerebrospinal fluid may thus be withdrawn in abundance for examination, and afterwards intrathecal injection of fluids performed, by slipping, on the butt of the needle, a short length of india-rubber tubing the other end of which is tightly secured to the nozzle of the injection syringe. This has been the method hitherto adopted, but it might answer almost as well if the needle were made so that it would be connected direct with the syringe, although the rubber connection provides a factor of safety in the event of the horse struggling. If the syringe is fitted with a piston that glides lightly within the barrel, it can readily be ascertained that the fluid enters the subarachnoid space successfully by its smooth passage under little pressure, and by a tendency for the regurgitation of cerebrospinal fluid into the syringe barrel when the pressure on the piston is relaxed.

Institute of the Horse.

Extended Programme of Work.

"Though not much has been heard of the Institute of the Horse lately," says a correspondent to *The Times* in a recent issue, "it has been unobtrusively doing some important work, the results of which will be far-reaching. The constitution of the institute has been thoroughly revised. The entrance fee has been reduced to £1 1s., which is also the amount of the annual subscription. The institute is on the limited liability basis, and it should be noted that the personal liability of every member is the reasonable one of £2.

"The programme of the institute has been much extended, and it now covers almost everything in connection with the horse. It claims to be the authoritative civilian centre of information on all matters relating to the horse, his training and management, and it will use its best endeavours to enrol all those who are interested in the horse, and from their experience to disseminate reliable *data* on matters connected with the horse. Its policy will be gradually to link up and co-operate with existing societies that have for their object the welfare of the horse, and especially will it co-operate with respect to an improvement in the conditions of the roads and bridle roads of the country. In this direction it has already done some good work.

"The educational policy of the institute has been developed. Lectures will be given on horsemanship and horsemastership, and the instruction will be all the more valuable inasmuch as it will be strictly impersonal and will be based upon the knowledge and information amassed during past centuries by equitation schools and veterinary colleges throughout the wrld. But a more important part of the educational plan is to organise a system of educating grooms and all those who have the care of horses or ponies, and to grant diplomas and certificates upon similar lines to those given to mechanics and chaffeurs. This is a move in the right direction, for the carelessness, not to say ignorance, of some of the grooms and men in charge of horses at horse shows has been the subject of much comment during the past show season.

"The institute also undertakes to recommend riding schools where reliable and practical instruction may be

given, and will encourage all horse shows, sports, and activities connected with horses. A still more important matter is the endeavour to obtain representation on all Government Committees relating to the horse. The War Office has done good work with respect to the King's Premiums Horses, but even more practical benefit would probably result from a little more expert opinion. A register of suitable instructors, lecturers, stud grooms, strappers, riding schools, and livery stables in all parts of the country will be a very useful source of information to all horse owners, and the publication of a special journal devoted to horses will supply a long-felt want.

"The institute will likewise provide:—(*a*) Legal advice on all questions relating to horses; (*b*) assistance and advice on buying and selling; (*c*) assistance to members in the insurance of all classes of horses, whether for racing, hunting, or travelling to shows, etc.; (*d*) the training of young horses, and the schooling of hunters and polo ponies; (*e*) arrange for the keep of horses of all classes, whether out at grass or in stables; (*f*) competent officials to give advice on methods and management of private stables; (*g*) in order to have available for members the best advice, or solution of any problem, the institute will endeavour to enlist the services of well-known hunting men, polo players, trainers, jockeys, breeders, veterinary surgeons, etc., who, being formed into various committees, would deal with any question received, and could be relied on to give the most authoritative and experienced advice.

"There is actually no practical point of importance which is not provided for, and there can be no doubt, if the scheme catches on as it ought, that our position as horsemen will be more than maintained. It would be well for us to be stirring at once, for there is something very like this going on in the United States, in the shape of riding clubs, which have a great hold in social circles, and which are doing much for practical horsemanship. The council has been reconstructed, and among those who have been added to it may be mentioned Captain John Bailward, Lieutenant-Colonel M. Borwick (joint master of the Middleton Hounds), Lieutenant-Colonel H. S. Davey, Lieutenant-Colonel Malise Graham, Mr. F. A. Nicolson, Lieutenant-Colonel D. P. Stewart, Major-General John Vaughan, and Mr. Isaac Bell, Master of the South and West Wilts Foxhounds."

World's Poultry Congress.

Two cinema theatres will be provided in the Congress exhibition grounds for the benefit of delegates attending the World's Poultry Congress at Ottawa in July. Mr. Ray S. Peck, Director of the Canadian Government Motion Picture Bureau, has been appointed chairman of the motion picture committee, and will be responsible for the exhibition of films illustrating poultry-keeping methods in most of the countries represented. It is considered that this will prove a more effective means of educating poultry-keepers in up-to-date methods than the exchange of papers, and the Canadian Government, which is devoting special attention to this feature of the Congress, will present the series of films entitled "Seeing Canada."

Arrangements for the business of the Congress are now practically complete, and the list of papers to be read includes contributions from representatives of England, Scotland, Northern Ireland, the United States, Canada, Belgium, Denmark, Holland, Spain, Germany, Italy, Russia, Latvia, Finland, Poland, Australia, South Africa, Brazil, Peru, Dominica, Colombia, Ecuador, the Philippines, Barbados, India, and Dutch East Africa.

At a meeting of the directors of the Highland and Agricultural Society in Edinburgh on 5th January, it was unanimously agreed to appoint Mr. Arthur Gofton, F.R.C.V.S., Chief Veterinary Inspector of the Edinburgh Corporation, as veterinary surgeon at the Show to be held in Edinburgh this year.

Diseases of Sheep.*

Address by Professor S. H. Gaiger, F.R.C.V.S., Liverpool University.

Professor Gaiger said it was obvious that the subject was far too enormous to deal with in one meeting, and he proposed to talk about some of those diseases upon which research had thrown new light, and particularly to emphasise points of interest to the general practitioner.

The practitioner was not called in a great deal in connection with sheep, and certainly he rarely was called in for individual cases of illness, because it was not an economical proposition. There was no doubt, however, that the farmer was often badly in need of professional help when he suffered losses of large numbers, as, for example, from lamb dysentery, braxy, trembling, parasitic diseases, and so forth.

The Colleges in the past had certainly not made sheep diseases a special subject of consideration, but there was more knowledge of them now than there used to be. Some practitioners were very apt to say to the farmer: "I know nothing about sheep"; and some added: "I don't want to." That was an unfortunate attitude, because he hoped to be able to show that some sheep diseases could be made a source of income to the practitioner.

If any men in industry knew their job, the flock-master and the shepherd knew the sheep industry, and it was as well to bear in mind that with shepherds they were dealing mainly with a very highly-educated class of man, and what the latter could not discuss about sheep diseases was not worth knowing. Both flockmasters and shepherds naturally expected the veterinary surgeon to be in a position to discuss sheep diseases with them, and expressed disappointment when they found the contrary to be the case. There was nothing mysterious about sheep diseases as distinct from the diseases of other animals, and there was no need when making a *post-mortem* to anticipate there was going to be a "catch" in it somewhere.

The first thing to be borne in mind in dealing with sheep ailments was that the sheep was practically a museum of parasites. In the alimentary canal alone of the sheep no less than thirty species of roundworms had been recorded, and the sheep could suffer from parasites in practically every organ of its body. In Britain the parasitic affections with which they would meet were parasitic gastritis and enteritis, distomatosis, and parasitic bronchitis. Parasitic bronchitis he did not propose to say much about, because the symptoms were so apparent. It was worth noting that frequently in a *post-mortem* worms were missed. because the slitting open of the trachea was insufficient for diagnosis. The incisions should be carried right down into the finer bronchioles, and they should not make a diagnosis without a most thorough examination there.

*Address presented to the Annual Meeting of the Yorkshire Division at Leeds, on 26th October, 1926.

Parasitic gastritis and enteritis were commonly caused by a relatively large worm (the *Haemonchus contortus*) in the fourth stomach, that could be seen with the naked eye, but frequently it was caused by a worm extremely difficult to see unless they collected some of the fourth stomach and intestinal contents in a glass dish and held it over a black surface. These very fine worms in the living state could very easily be overlooked, and had to be carefully hunted for if they were to be found.

Passing to distomatosis, there was practically only one parasite which caused liver-fluke (*Fasciola hepatica*), but if they got an opportunity of making a *post-mortem* they should look carefully for the small fluke (*Dicrocoelium dendriticum*), which, however, was very rare in Britain.

What was of most interest to practitioners in those diseases were the questions of diagnosis, prevention and cure. There was hardly a flock in the country which had not got stomach worms to some extent, and an enormous amount of good could be done by the farmers treating them with worm pills. In making a *post-mortem* they should not be misled by the presence of worms, which were always present to some extent. Sheep suffering from stomach worm infestation were known by farmers as " piners." The sheep wasted away, became anæmic, and might finally die. Liver-fluke symptoms they probably knew, but one peculiarity was an œdematous swelling under the lower jaw, filled with fluid. One of the earliest symptoms was a watery and sunken eye, a kind of dejected appearance, and from that time there would be progressive anæmia, emaciation, and general weakness ; there was a pallid appearance, and masses of wool came out, the wool being peculiarly brittle.

He wanted them to go in for a more scientific method of diagnosis of those conditions, and they should examine microscopically the fæces of a number of sheep to find what parasites were present. The method was extremely simple, the fæces being put into a little water, mashed up, and a tiny drop being put under the microscope. With a little practice they would in time be able to spot the eggs of the different parasites. The liver-fluke's egg was easily recognised because it had a lid at one end. The lungworm's presence was denoted by finding hatched embryos in the fæces. They would know stomach worms because of the peculiar way in which the content divided up into 4, 8, 16, 32. The egg of the almost harmless Trichuris was of a yellowish tint, and had a plugged orifice at each end.

He strongly advised them to use the method of diagnosis he had described, as it impressed the farmer a great deal more than having to kill sheep to make the diagnosis.

Hall's *Diagnosis and Treatment of Internal Parasites* was a small and inexpensive book which he could recommend, as it would at least give them an introduction to the subject.

Braxy and blackquarter in sheep were almost always caused by the braxy bacillus or the *vibrion septique*. The *Bacillus chauvoei* had not yet been found in sheep in this country. In the *Veterinary Journal* for September, 1924, Allen and Bosworth made certain statements that *Bacillus chauvoei* did cause blackquarter in sheep, but he (the speaker) thought it was more of a general statement than one intended to be taken seriously. It was interesting to note that the braxy bacillus would cause braxy in one district and blackquarter in another. The only explanation seemed to be the point of entry into the body. Braxy was set up when the *vibrion septique* entered through the wall of the fourth stomach, and blackquarter when it entered through a small wound, as in the feet. They would appreciate that if the *Bacillus chauvoei* did not infect sheep, there was little use in putting in a vaccine of that organism as a preventive, and the vaccines should be made from the *vibrion septique*.

Inoculation was being done on a very large scale, and in the north they had something like 40,000 inoculations a year. It had also been taken up in other parts of the country, abroad and in the colonies, and had been found to be very useful in reducing the death rate. It was impossible for the whole of this work to be done by the practitioner, as the large numbers to be dealt with had to receive their injections during the last week in September or the first two weeks in October. But where the practitioners could do it, as was preferable, he warned them that sheep were particularly susceptible to wound infection by the braxy bacillus, and proper care should be taken in technique during inoculation. They would find they got plenty of assistance from the farmer and his men, and they would probably get through as many as 100 sheep per hour. The vaccine used was the germ-free filtrate of the bacillus, and the inoculation was done subcutaneously on the bare region of the groin. This should be washed by rubbing lightly and softly, by means of a good quality paint brush, with a lysol solution, a cake of carbolic soap being used to help the lather. After injection the sheep might be a little lame, but there should be no lying down and cessation of feeding. The farmer never liked to see his sheep lame, and it was better, before inoculating a whole flock, to try the effect on a half score or so of sheep. If there were no harmful results they could go on and do 400 or 500 a day or two later.

In talking to a farmer they should be able to distinguish between a sheep that had died of braxy and one that had died of trembling. Braxy was an abdominal wall infection, the putrefactive organism getting into the whole system from the stomach and setting up inflammation. Strictly speaking, the sheep began to decompose before death, and a braxy carcase was always very tightly blown up. A sheep found dead of trembling was never distended in that fashion. On *post-mortem* there was no bowel inflammation, but they would find enlarged glands throughout the body, the best gland to look for being the one just behind the hock joint. If they found that in an emaciated sheep, with great anæmia, they were safe in diagnosing trembling. On the other hand, braxy was purely abdominal, and there was no excuse for mixing up the two diseases.

Dealing with lamb dysentery, Professor Gaiger said this was one of the most serious of sheep diseases in the country. It was a seasonal disease, in that it occurred in springtime, when the lambs were born. It was also regional, in that it prevailed mainly in the counties round the border between Scotland and England, although there were isolated outbreaks away from those countries. The disease started on a farm with perhaps ten deaths the first year, the next year twenty, the next year forty, and so it went on duplicating itself, and when a farm had been infected for six or seven years it was almost a tragedy. Investigations had been proceeding for some years, and certainly progress had been made, but there was still much work to be done.

As to diagnosis, he did not think they were likely to mistake lamb dysentery, as the *post-mortem* lesions were distinctive. In the acute cases there was a general gastro-enteritis affecting the greater part of the bowel, with a small commencing ulcer of the size of a pin head or small lentil. In the less acute cases there was a certain amount of enteritis, with a larger number of ulcers of varying sizes. The tiny ulcers in the acute cases had yellow centres with a red ring round. In his view, although it was not accepted by some, the disease was contagious, and his advice to the farmer was to have an early diagnosis made, and to get rid of the infected lambs as soon as possible. Infected stock should not be moved to clean land, but the death rate in the lambs could be lessened if pregnant ewes were moved to clean ground before the lambs were born, though this was often impracticable.

The inoculation of pregnant ewes had proved disappointing, but the inoculation of the lambs had been more successful. The serum and vaccines used had been made of the several organisms associated with the disease. Necessarily the shepherd had to do the lamb inoculations on his round, and he made a fairly good job of it. Inoculation of lambs had been shown to be a good thing, and practitioners should strongly advocate it. Treatment was useless, as nothing could be done once they were infected. Infection was not carried away by cast sheep sold in the autumn, and stock could be sold then with impunity. As to trembling, he had told them something of the *post-mortem* diagnosis of it. The symptoms were mainly nervous. One difference between braxy and trembling was that a braxy sheep was usually found dead, whereas a trembling sheep was often found alive.

If they remembered that trembling seemed to be a disease of the nervous system ending in paralysis and chronic spasms of the muscles, they had almost a complete diagnosis. They should note that trembling in ewes close to lambing time was probably nothing more than milk fever, which would respond to the usual treatment for cows. In Scotland they had started blowing them up, even crude methods being often successful, but Arnolds now made a small milk fever outfit for use with a small teat syphon.

The inoculation of hoggs returning from wintering seemed to give protection, but the method could only be used by the qualified man. In Scotland the farmer swore by it, and wanted it done every year. The method was to draw off the blood of a sick trembling sheep and inject it in quantities of 10 c.c. into as many healthy hoggs as it would do.

Professor Gaiger said he had intended dealing with other diseases, but time was getting short, and he would limit his remarks to gangrenous mammitis in ewes, a condition which was very common in some districts. The cause was a coccus which could be obtained in pure culture from the milk of all early cases.

Inoculation had been used for a number of years, particularly in France. Ewes could be inoculated as a preventative on farms where large numbers got it every year, but there there were only a few in the year it would not be worth the while of the farmer to inoculate the whole flock to avoid it. Anti-serum was used, and while they would not save the udder they would save the life of the ewe, which meant a great deal to the farmer. They could obtain the vaccine at almost any laboratory or at the Pasteur Institute in Paris. It was astonishing to see the extent to which gangrene could occur in the udder of the ewe, and yet to find the ewe still alive. Surgical interference was a very great help in getting rid of the toxin.

In thanking Professor Gaiger for his address, the CHAIRMAN said it was brimful of information, and every single member present had gained some knowledge from his remarks.

Colonel BOWES said they were all indebted to Professor Gaiger, and they knew he had done some original work on sheep diseases, and very valuable work. There was no doubt that the general practitioner was lacking in knowledge on the subject, but it was probably due to lack of opportunity as much as anything.

Mr. Bowman, Mr. Campbell, and others also spoke, and thanked Professor Gaiger for his address.

The first recorded cure of leucocythæmia (leukæmia) was published in 1845 by John Hughes Bennett, English physician and pathologist.

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The Eustachian tube was named after B. Eustachio, an Italian anatomist of the sixteenth century.

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Salicylic acid was discovered in 1838 by Piria as a decomposition product of salicin ($C_{13}H_{18}O_7$), the bitter principle of willow-bark, which was discovered in 1831 by Leroux.

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The Bacillus of malignant œdema was described first by Pasteur in 1877.

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Local anæsthesia by means of an ether spray was introduced in 1866.

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The name "rickets" is from the old English "wrickken," to twist. The disease was first described in 1649 by Arnold de Boot, a Frisian physician practising in Ireland. The more technical medical term, rachitis, was suggested by Francis Glisson in 1650.

The Veterinary Record.

15th January, 1927.

THE ROYAL VETERINARY COLLEGE REBUILDING FUND APPEAL.

The particular attention of all our readers is directed to the public appeal that has just been issued on behalf of the Royal Veterinary College for funds towards what will practically amount to the complete reconstruction of its College buildings at Camden Town.

The profession owes much to this Institution. It was the first of its kind to be established in the British Isles, and to its founders must be given the credit of making the first efforts to raise the treatment of animals from practices of quackery and charlatanism to a science. Just as Lyons was the "cradle" of veterinary science for Europe, so can Camden Town be termed for the British Empire. Not only has the Royal Veterinary College always applied its influence towards perfecting the methods of treatment of animals, but it has always taken a determined stand in raising the status of the individual practitioner. To the College must be given much of the credit for nurturing the aspirations which eventually led to the status and appellation of the veterinary practitioner being rigidly defined by statute, till to-day the profession ranks with any in respect of the type of man that is attracted to it.

The early history of the College is a story of an uphill fight against untoward circumstances and personal antagonisms, but, owing to unselfish and persistent endeavour on the part of public-spirited individuals, all obstacles were eventually overcome, and for the last 130 years the College has gradually extended its scope of usefulness. Private endeavour, which was responsible for the founding of the College, has been largely relied upon in meeting the requirements of its natural extension. and the consequence is that, in an effort to meet new requirements as they were created, the Governors, between the years 1890 and 1894, spent nearly the whole of the accumulated funds of the College on building and equipment. It is thus no exaggeration to say that the Royal Veterinary College, whilst expected to carry on work of great national importance, has been left largely to its own resources, and up to the present it has never launched any public appeal for assistance. It is now faced with the necessity of raising a large sum of money in order that the structure and equipment may be brought to be in keeping with modern ideas. Some of the buildings erected at the time of the establishment of the College are still in use, though practically falling down, and others which have been constructed from time to time during the last century are now in such a state that efficiency is only maintained at the expense of the convenience and comfort of the Staff, students and often of the patients.

To many of the veterinary surgeons throughout the Empire, who look to the College as their *alma mater*, the conditions that exist at Camden Town need no dilating upon. They are known and are often the subject of comment. There is no doubt that when this appeal comes to the notice of these members of the profession a remark such as "It is about time, too," will be frequently uttered. The replacement of the leaky roofs and obsolete equipment of the "cradle" of veterinary science of the British Empire should be a point of honour to the whole veterinary profession throughout the Empire. It seems hardly right that the professors, students, graduates and others connected with the College should have misgivings in conducting friends and acquaintances round the chief institution of its sort in the country. A particular appeal, therefore, is made to the veterinary profession throughout the Empire to do their utmost to assist the effort that is now being made to alter this state of affairs, so that there will arise in Camden Town a structure complete with laboratories, infirmary, horse-boxes, kennels, to say nothing of lecture rooms and a common room for the comfort of the students, that will be a credit to the profession which relies so much upon the College for its new blood.

The minimum amount which it is calculated will accomplish this is a sum of £85,000, though we doubt if anything less than £100,000 will be sufficient to rebuild and equip an institution recognised as the premier Veterinary College of the Empire. The Government has shown its recognition of the importance of the national work carried on by the College, and towards this sum it has promised a grant of £35,000 from the Development Fund, leaving a further £50,000 to be provided from other sources. The grant of £35,000, however, is contingent upon a similar sum being found elsewhere. It should, therefore, be pointed out that up to £35,000 being reached by public subscription every pound subscribed produces two pounds towards the work of rebuilding. Before the appeal was publicly issued, a considerable sum was subscribed by the Governors and their friends, whilst the Royal Agricultural Society of England has given £500. Much, however, must yet be forthcoming, and it is earnestly hoped that in the special circum-

stances every veterinary surgeon will send as much as he possibly can towards this fund. It should not be said that those who received their training at Camden Town failed to support their *alma mater* in her hour of need, and those who were students elsewhere should bear in mind what the College has done for veterinary science in this country in its early days of struggle.

All donations should be sent direct to the Earl of Northbrook, Royal Veterinary College, Camden Town, London, N.W.1.

Tractors in Agriculture.

THE RETURN TO HORSE-POWER.

Among the many changes brought about in English agriculture by the Great War, said Dr. B. A. Keen, in a paper read before the members of the Institution of Automobile Engineers on January 4th, one of the most interesting was the partial supplanting of horses by mechanical power. Many of the smaller farms had added a tractor to their equipment in the " boom " years immediately following the war. The prosperity, however, was only transitory, and the change back to horse-power was only a degree less remarkable than the reverse movement by which it had been preceded.

No technical improvement would find a permanent place in the business of agriculture on the ground alone that it was a technical improvement. It must have an economic advantage, either in reducing expenses or increasing receipts, if it were to stand any chance of adoption. The rapid fall in the market prices that followed the post-war " boom " years had the effect of making horse-power more economical than tractor power. A second reason for the decline was the unsatisfactory performances of the machines. The new heavier and more powerful machines were an unknown quantity, and there were few workers who had the necessary combination of agricultural and engineering knowledge to get the best out of the machines and keep them in good running order. In 1919 some fifty or sixty different kinds of tractors were on the market, and in 1924 less than a dozen had survived.

As a result of experiments on a 400-acre farm in Berkshire, it had been found that there was nothing to choose between the two methods of traction, as far as the actual cost was concerned. But the true value of a tractor was not to be measured entirely in terms of costing *data*, for these did not put a financial value on its most important characteristics—power and speed. These properties were peculiarly important in English agriculture, owing to the diversified farming and the variable nature of our climate. The tractor was only a means to an end. If that end were clearly understood and the scientific principles involved clearly sorted out, the development of suitable tractive devices and implements could proceed on a much surer basis than was the case when the trial and error of empirical investigation were employed.—*The Times.*

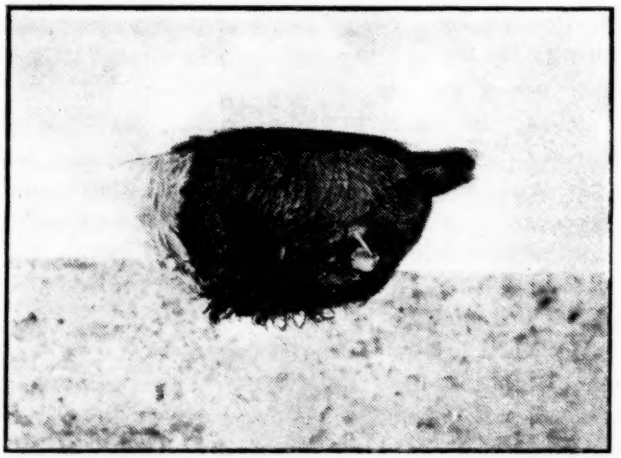
CLINICAL AND CASE REPORTS.

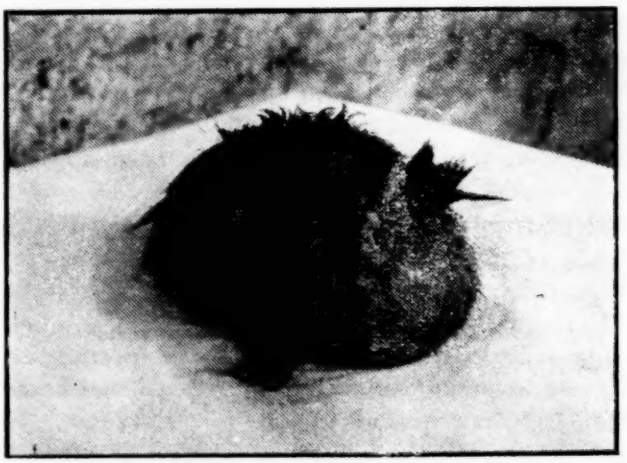
Monster as Twin to a Normal Calf.

By J. R. BAXTER, M.R.C.V.S., Lechlade.

I send herewith two portraits of a freak calf which I thought was exceptionally interesting. I have had a fairly extensive experience of freaks, but never saw or heard of anything quite like this. One point, which I think is most unusual, is that this was twin to a very nice live heifer calf, healthy and normal in every way.

There is no trace of any legs in the specimen and the size and shape is roughly that of a rugby football. The " appendages " shown sticking out at the sides are ears and a matchstick props open the very rudimentary mouth. The eyelashes are very well developed though they do not show in the photo, but the eyes are absent and the orbits only represented by small depressions which would perhaps have been large enough to hold a mole's eyes.





Eversion of the Uterus in the Cow.

By F. W. CHAMBERLAIN, M.R.C.V.S., Cheam.

We have, most of us, encountered many of these cases where the straining and bearing down have been particularly forcible. In my earlier days I have had to spend hours on such cases and had great trouble in restoring the protruded organ and in keeping it replaced. I was never very fond of suturing the vulva or using the vulval clamp, but frequently had to employ one or the other, in addition to large doses of chloral hydrate, raising the hind quarters, etc. Some ten years ago I resorted to *temporary tracheotomy*, and I cordially recommend it as being a most effective method of stopping the straining and bearing down. It is as impossible for a cow to strain violently with a hole in her trachea as it is for a man violently to void bowel-flatus with his mouth open.

I claim nothing original in the treatment, which does not emanate from me. Somewhere, years ago, I read of its recommendation by, I think, a German veterinarian.

I use the ordinary temporary tracheotomy tube—the one-piece tube with long canula—and tie it around the neck with tape.

The tube is well illustrated on page 198 of *Regional Surgery*—but it is a familiar tool in practice. You want a good pair of bulldogs on the cow's nose and a good man at the horns. If procurable, I always like a sack of sand across the horns to prevent also the arching of the back that always precedes straining. A vertical slit is made through a couple of tracheal rings and there is no removal of any portion of such rings. The wound afterwards heals quite readily.

Dog Breeding with the Wolf.

By T. F. PRIME, M.R.C.V.S., Upper Norwood.

I have in my possession a bitch whose sire was a Canadian Timber Wolf and the dam a Collie. She has had one litter of puppies by an Alsatian dog and the puppies were very nice. One puppy, a bitch, has had a litter by an Alsatian, which shows that crosses between the dog and wolf are not sterile. I have seen numbers of second and third cross-breds in Tyrwhytt Drake's Menagerie and in most cases they turn out very good tempered and reliable dogs. Apparently, the cross is very virile and one seems apparently less likely to get a sterile bitch than one does in the highly-bred toy dogs.

"SEEN IT ON THE PICTURES?"

A veterinary surgeon called for the defence in a horse cruelty case at Tottenham said the horse walked with a curious gait. It ambled along.

"In the manner of Charlie Chaplin?" asked the magistrate

"Exactly as Charlie walks," was the grave reply.

REPORTS.

[Government of the Gold Coast. REPORT OF THE VETERINARY DEPARTMENT FOR THE PERIOD APRIL, 1925, TO MARCH, 1926. PP. 14. OBTAINABLE FROM THE CROWN AGENTS FOR THE COLONIES, 4 MILLBANK, LONDON, S.W. 1. PRICE, 1s.].

Under the heading of "Administration," we are told that the staff of the Veterinary Department on 31st March, 1925, comprised three British veterinary officers, two British inspectors of livestock, and one Indian veterinary superintendent. In addition, the services of locally trained African staff are employed in the capacity of "veterinary assistants." These veterinary assistants receive a systematic course of instruction in a veterinary school at Tamale. The complement of men under tuition is seven, and the course would appear to be for three years, with annual examinations. The object is obviously excellent, but it is difficult to understand how the business of tuition can be properly done unless vital field work is to suffer in circumstances where, "since last May till February, only one veterinary officer has functioned," and that this officer has been "of necessity mainly confined to Tamale headquarters and its environs." One gains the impression that the scheme of instruction is rather too ambitious to be adequately undertaken by an already overtaxed staff in a disease-ridden country. It may be suggested that perhaps a sufficient training could be given with a greater economy of time if the pupils accompanied the veterinary officer into the field, learning and assisting as they went.

The contagious diseases that occurred during the year were contagious bovine pleuro-pneumonia, epizootic lymphangitis, mange, myiasis, parasitic broncho-pneumonia of pigs, parasitic gastritis of sheep, piroplasmosis, epithelioma contagiosa of fowls, possibly a case of anthrax, and, of course, rinderpest. Altogether, a fairly typical African collection and enough to satisfy the most greedy clinician.

Only the references to myiasis and rinderpest among the diseases call for notice. The notes on the former disease are brief and are given in full as follows:—

"Many cases of cutaneous myiasis in cattle were treated in the rains. A few cases of intestinal myiasis (bots) in horses were treated. *A great deal of research work could be done* re *myiasis, hatching out larvae, and identifying the causal flies.* Cutaneous myiasis is responsible for many fatalities and for much loss of condition in less serious cases. Our methods of tick eradication are successful in preventing many cases, as myiasis is often a sequel to laceration of the skin by tick."

The italics are the reviewer's.

There is a full reference to cattle plague (rinderpest). "The outbreak in Kusari district, which was in progress at the end of last year, was stamped out altogether by the end of September." This good work appears to have been accomplished by an inspector of

livestock, Mr. A. C. Miller, who, we are told, "in addition castrated nearly 1,000 head of 'weed' bulls and calves himself." It may be observed, without professional jealousy and with full appreciation of Mr. Miller's work, that there should be enough material here to justify the employment of a qualified veterinarian, apart from his opportunities for scientific research as sole officer-in-charge of the North Eastern Veterinary Section.

After the stamping-out of the Kusari outbreak, the appearance of rinderpest was limited to "a few isolated outbreaks in frontier divisions, but none of these has developed or spread."

"All the cattle plague this year had its origin in French territory . . . . . The French adopt practically no prophylactic measures to prevent the spread of rinderpest."

A good deal of inoculation was done during the year; 234 inoculations by the sera-vaccine method and 4,491 by the serum alone. Under the Animal Husbandry Section we learn that notwithstanding rinderpest the numbers of livestock in the Colony continue to increase.

A good deal of detailed information is given of the progress that is being made in this Section of veterinary activity. Altogether the report clearly shows that Captain W. P. Beal and his small staff are doing all that can humanly be expected of them to cope with a formidable task under climatic and hygienic conditions which, to say the least of it, are not favourable.

J. W. R.

Report of the Warble Fly Committee.

The report of the Departmental Committee appointed by the Minister of Agriculture and Fisheries to consider and recommend possible ways and means of exterminating the warble fly pest has now been issued.*

The Committee state that, as a result of their necessarily prolonged inquiries and trials, much valuable information has been obtained. A detailed account of the Committee's experiments is prefaced by an interesting review of the life history and habits of the pest, which has caused losses in respect of warbled hides estimated, in the worst years, at from £400,000 to £500,000 per annum.

The fly deposits its eggs on cattle, mostly on the legs, during the months of May to August. In four or five days the maggots are hatched and enter the skin close to where the eggs are laid. After wandering through the animal's system the maggots reach the wall of the gullet about September to January, and after some months' residence in the gullet wall they continue their wanderings and appear under the skin on the back of the animal along either side of the spinal column, sometimes as early as November and December, but more frequently from January and February onwards. Here the insects feed on the fluid arising from the animal's inflamed flesh, and breathing through a hole bored through the animal's skin they become fully grown during the spring and work their way out through the breathing holes and fall to the ground. Here they undergo a change into the pupal stage and rest among the grass for five or six weeks before emerging from the puparium as a fly.

Referring to the widely-held view that one method of infection is by absorption of the eggs into the animal's system through the mouth when an animal licks its skin, the Committee state that it has been proved by experiment that this is not so, but that under natural conditions the animals by licking their skin dislodge or destroy the eggs rather than facilitate the entrance of the parasites into their bodies.

The experiments were designed to determine (*a*) methods of preventing the fly from laying its eggs on cattle, and (*b*) the effects of drugs, dressings and other means for destroying the larvæ in the body of the host.

In the first place, the experiments confirmed the conclusion reached by observers in America, Europe and this country that the warble fly lays its eggs almost exclusively on the legs of the animal, occasionally on the sides, flanks, and hips, but never on the back. The results of the experiments designed to prevent egg-laying, although they show that some protection is afforded by the application of certain substances during the summer (egg-laying) season, were not definitely satisfactory. The warble fly lotion gave the best results, but even in this case the reduction in the number of warble maggots in the "treated" animals did not exceed 50 per cent.

In regard to the prevention of egg-laying, therefore, the Committee is unable to recommend a satisfactory method, but it is convinced that much greater possibilities of exterminating the warble pest are held out by the alternative method of destroying the maggots. Attempts to destroy the maggot during its early migrating stages by injecting drugs into the host produced negative results, and the Committee considers the most effective method is by destruction of the maggot during the months February to June, either by squeezing out the larvæ through the breathing holes as they become evident, or by the application of a destructive dressing by means of a syringe, cloth or sponge as explained in detail in the Report. The method of "squeezing out," however, involves great effort, inconvenience and frequent handling, but these objections do not apply to the same extent to the application of dressings. At least four dressings and probably five in a season at intervals of two to three weeks would be necessary. It is important that these should be applied so that the liquid penetrates through the breathing hole into the cavity of the warble and comes in contact with the maggot.

In the latter connexion the Committee recommends dressings of (1) tobacco powder and lime, provided that tobacco with a standard nicotine content be available so as to avoid the use of either too strong or too weak a dressing; (2) derris root; and (3) nicotine sulphate and lime, all of which preparations were tried with success in the course of the Committee's experiments.

(1) The first of these consists of 4lb. of tobacco powder, 1lb. of lime, and 1 gallon of water. The directions for making the wash are:—In a gallon of water mix 1lb. of fresh lime. Add 4lb. of the tobacco powder and allow the mixture to stand for twenty-four hours. Then strain through coarse muslin or sacking and apply to the backs of infected cattle with a cloth or brush.

(2) The Committee expresses the opinion that derris has an advantage over the tobacco dressing in that, being

*Obtainable from H.M. Stationery Office, Adastral House, Kingsway, W.C. 2, price 1s. 9d. net.

a powder, it is easily carried and ready to be mixed and applied immediately. The weakness of the tobacco treatment lies in the trouble and inconvenience of preparation and handling, the necessity for steeping the mixture in water for twenty-four hours, and the difficulty of transporting the prepared solution in bulk. Derris, and to a certain extent also nicotine sulphate, dressings do not present the same difficulties and on that account should make a stronger appeal to the stockowner. There is not at the moment, however, any non-proprietary standardised form of derris root on the market, and in the circumstances the Committee feel that the exploitation of insecticides derived from derris root for the purpose of destroying warbles must be left to the firms interested in the production of insecticides.

(3) On the other hand, nicotine sulphate is now freely available in the form of a solution guaranteed to contain 40 per cent. of nicotine. The formula should be :—

Nicotine sulphate	...	2 fluid oz.
Calcium hydrate	...	1lb.
Water	...	1 gallon

The nicotine should be measured out in one of the glass or celluloid measures sold by any chemist. It is best first to place the lime in the vessel, then to add the water gradually, stirring thoroughly so as to prevent the formation of lumps, and lastly to add the nicotine sulphate. The mixture is then ready for use, but it will not retain its strength and should only be prepared when required.

Summarising its conclusions, the Committee points out that the total extermination of warble flies is a harder undertaking than is generally thought, but that a few years' steady work on maggot destruction over any considerable area would do much to reduce the warble population to the verge of extermination provided the sources of introduction were closed.

Discussing a suggestion that legislation should be introduced, the Committee expresses the view that no proposals for compulsory action on the lines of prevention —*i.e.*, prevention of egg-laying or destruction of eggs after deposit—warrant serious consideration. The Committee's experiments on this aspect of the question were not successful enough to justify such action, and compulsory treatment of all animals would be impracticable. In considering legislative measures in relation to the alternative method of treatment for maggot destruction, the Committee observes that, whilst such compulsory operations over a lengthy period would doubtless effect a considerable reduction in the number of larvæ and consequently of warble flies in succeeding years, the success of such measures in this country would be seriously prejudiced by constant importations of warble-infected cattle from overseas.

It should also be borne in mind that, except in the case of beasts so badly warbled as to be in poor condition generally, no differentiation is made in the markets between beasts which are warbled and those which are not. In the store-stock trade no notice of warbles whatever appears to be taken, while in the fat-stock trade prices are presumably fixed upon a basis which allows the butcher to discount losses due to warble-damaged hides and meat. Under existing conditions, therefore, the average farmer has no obvious inducement to deal with the warble pest ; but he might, the Committee adds, be persuaded to make

(Continued at foot of next column.)

DIVISIONAL REPORT.

Yorkshire Division.*

Annual Meeting at Leeds.

The Annual Meeting of the Yorkshire Division was held at the Hotel Metropole, Leeds, on Friday, 29th October, 1926, when there were present : Mr. A. Ellison (President) in the chair, Mr. A. McCarmick (Hon. Treasurer), Mr. T. C. Hall (Hon Secretary), Messrs. W. Campbell, S. E. Sampson, G. Whitehead, M. Robinson, A. Gentle, H. G. Bowes, J. C. Gaunt, J. Procter, F. C. Scott, W. Ackroyd, G. E. Bowman, W. Hamilton, J. Woodrow, F. B. Greer, W. Crawford, W. R. McKinna, E. H. Pratt, W. Halstead, A. A. Hamilton, J. Powley, and Wm. Petrie.

In opening the proceedings, the Chairman said the first item of business was a painful one, and it was to refer to the death of the late Major Pawlett, who was an old member of the Division, a man very well respected, a man who saw service in the Boer War and also in the last war. The Council had sent a wreath for the funeral, and representatives of the Division had attended. He would like the members to pass a vote of condolence on his death.

The resolution was passed by the members, standing.

The *minutes* of the last meeting, held on the 13th August, 1926, were taken as read, and were adopted.

Letters of apology for absence were received from Messrs. Abson, A. W. Noel Pillers, Pollock, Croudace, Fletcher, Clarkson, and J. McKinna.

At this stage an address on the diseases of sheep was delivered by Professor S. H. Gaiger, Liverpool University.

[Professor Gaiger's Address is reproduced elsewhere in this issue.—Ed.]

A vote of thanks to Professor Gaiger was proposed by the Chairman, seconded by Colonel Bowes, and carried with acclamation.

New Members. The following new members were nominated : W. Halstead, Public Health Office, Bradford ; John F. Rankin, Skipton.

Balance Sheet. The Hon. Treasurer explained various items on the printed balance sheet, and it was proposed by Mr. Whitehead, seconded by Mr. Campbell, and unanimously resolved that the balance sheet as presented be accepted and passed.

(Continued from previous column).

the attempt if it were clear that he would share in the resulting profits.

In conclusion the Committee suggests that opportunities exist for further investigation both by individuals and on commercial lines in the direction of adding to the entomological knowledge of the fly, and as to the measures available for controlling the warble flies and for preventing the laying of eggs.—*Journal of the Ministry of Agriculture*, December, 1926.

* Received on December 21st, 1926.

Election of Officers.

The following were elected as the officers of the Division for 1926-27 :—

President : Mr. Campbell. Proposed by Mr. Ellison, seconded by Mr. Gentle.

Vice-Presidents : Messrs. Ellison, Scott and Watson.

Hon. Secretary : Mr. T. C. Hall.

Hon. Treasurer : Mr. McCarmick.

Auditors : Messrs. Wharam and Crawford.

Council : Messrs. Ackroyd, Barber, Bowman, Bowes, Clarkson, Gaunt, McKinna, Whitehead.

Representatives on Council of N. V. M. A. : Messrs. Clarkson, Mr. McKinna, and the Secretary.

Report of Delegate to N. V. M. A. Council Meeting held at Dublin. The Hon. Secretary read his report of the proceedings.

It was moved by Mr. Campbell, seconded by Mr. Ellison and carried unanimously, that a vote of thanks be accorded to Mr. Hall for his attendance as delegate and for his report.

The Council then went into Committee to discuss the question of appointments of Veterinary Officers to the West Riding County Council.

Mr. Campbell proposed, Mr. Whitehead seconded, and it was resolved that a cordial vote of thanks be given to Mr. Ellison, the past President, for his excellent conduct in the Chair during his term of office.

The proceedings then terminated.

T. C. Hall,
Hon. Secretary.

The Veterinary Surgeons Act of New Zealand.

We have received from the Hon. Secretary and Treasurer of the New Zealand Veterinary Association, Inc., a copy of the Veterinary Surgeons Act of New Zealand, which becomes operative on the 1st of January next.

In forwarding, Mr. Hopkirk writes : "The passing of this Act by Parliament is due to the interest taken and work done by members of the New Zealand Veterinary Association, Inc., which was formed in 1923 and which at the present time consists of forty members. You will note that, under the new Act, registration of unqualified men is not necessary and that only a certain few of such men are privileged to call themselves 'veterinary practitioners,' the remainder being allowed to practice without the designation 'veterinarian.' To a public becoming more and more educated in the care of stock, the unqualified 'quack' will soon be known as such and not pass as a veterinarian with qualifications."

The Text of the Act is as follows :—

An Act to provide for the Registration of Veterinary Surgeons, 9th September, 1926.

BE IT ENACTED by the General Assembly of New Zealand in Parliament assembled, and by the authority of the same, as follows :—

1. This Act may be cited as the Veterinary Surgeons Act, 1926, and shall come into force on the first day of January, nineteen hundred and twenty-seven.

2. In this Act, unless the context otherwise requires,—

"Board" means the Veterinary Surgeons Board constituted under this Act :

"Registrar" means the Registrar appointed under this Act.

3. (1.) For the purposes of this Act there shall be appointed a Board to be called the Veterinary Surgeons Board.

(2.) The Board shall consist of—

(*a*). The Registrar, who shall be appointed by the Governor-General from among the veterinary surgeons in the employment of the Department of Agriculture ;

(*b*.) One person to be appointed on the recommendation of the Minister of Agriculture ; and

(*c*.) Two veterinary surgeons to be appointed on the recommendation of the incorporated society known as the New Zealand Veterinary Association (Incorporated).

(3.) The members of the Board other than the Registrar, who shall hold office during pleasure, shall be appointed by the Governor-General for a period of three years, save that any such member may be reappointed, or may be at any time removed from office by the Governor-General for disability, insolvency, neglect of duty, or misconduct, or may at any time resign his office by writing addressed to the Registrar :

Provided that, after the expiration of twelve months from the commencement of this Act, no person shall be appointed or shall continue to be a member of the Board as one of the veterinary surgeons appointed on the recommendation of the New Zealand Veterinary Association (Incorporated) unless he is registered under this Act.

(4.) If any member of the Board other than the Registrar dies, resigns, or otherwise vacates his office, the vacancy so created shall, within two months after the occurrence thereof, be filled in the manner in which the appointment to the vacant office was originally made. Every person so appointed shall hold office for the residue of the term for which his predecessor was appointed.

(5.) The members of the Board, other than the Registrar, shall be paid such allowances as may be lawfully appointed and all travelling expenses reasonably incurred by them in respect of attendance at meetings of the Board.

(6.) In the absence of the Registrar from any meeting of the Board any officer of the Department of Agriculture may be appointed by the Registrar to act as his deputy, and while so acting shall for the purposes of this Act have all the powers of the Registrar.

4. (1.) The Registrar shall be the Chairman of the Board.

(2.) Meetings of the Board shall be held at such times and places as the Board or the Chairman may appoint.

(3.) The Board may regulate its procedure in such manner as it thinks fit.

5. The Registrar shall keep in his office a book, to be called the Register of Veterinary Surgeons, in which shall be entered the names of all persons registered as veterinary surgeons under this Act, together with such other particulars in relation thereto as may from time to time be prescribed.

6. (1.) Every person shall, on payment of the prescribed fee, be entitled to be registered as a veterinary surgeon under this Act who satisfies the Board that he is of good character and repute, and that—

(*a*.) He is a member of the Royal College of Veterinary Surgeons, at London ; or

(*b*.) He is a graduate in veterinary medicine and surgery, or the holder of a veterinary diploma, of any veterinary school or other institution (not being the Royal College of Veterinary Surgeons aforesaid) by the statutes or rules of which a course of not less than four years' study of the appropriate subjects is required before a veterinary degree or diploma, as the case may be, can be conferred, and which is recognised by the Government of the country in which it is established and by the Board as a proper and efficient teaching institution ; or

(*c*.) Not being qualified to be registered under either of the two last preceding paragraphs he was employed or was practising as a veterinary surgeon in New Zealand at the date of the commencement of this Act, and that he is a graduate

in veterinary medicine and surgery, or the holder of a veterinary diploma, of a veterinary school or other institution by the statutes or rules of which a course of three years' study of the appropriate subjects is required before a veterinary degree or diploma, as the case may be, can be conferred, and which is recognised by the Government of the country in which it is established and by the Board as an efficient teaching institution.

(2.) No person shall be registered as a veterinary surgeon under paragraph (*c*) of the last preceding subsection unless application for registration is made within one year after the commencement of this Act.

7. (1.) Every application for registration under this Act shall be in writing addressed to the Board, and all the facts set forth in the application shall be verified by statutory declaration of the applicant.

(2.) No entry in the register of the name of any person shall be made by the Registrar without the direction in writing of the Board.

8. Every person registered as a veterinary surgeon under this Act shall, on payment of the prescribed fee, be entitled to receive a certificate of registration under the hand of the Registrar.

9. Every person who makes any false or fraudulent representation, or produces to the Board or the Registrar any false certificate or testimonial, for the purpose of securing his registration under this Act commits an offence, and is liable to a fine of fifty pounds.

10. The Board may cause to be removed from the register the name of every registered veterinary surgeon who has been registered in error, or who is convicted of any offence punishable by imprisonment and dishonouring him in the public estimation, or who has been guilty of such improper conduct as renders him, in the opinion of the Board, unfit to be registered under this Act.

11. (1) Every person whose application for registration has been declined by the Board, or whose name has been removed from the register, may, within three months after notice of such refusal or removal has been communicated to him by the Registrar, appeal in the prescribed manner to a Board of Appeal, consisting of a Magistrate and two assessors, appointed in accordance with regulations under this Act.

(2.) The Board of Appeal shall thereupon hear the appeal, and may either confirm the decision of the Board, or order the registration of the appellant or the restoration of his name to the register, and the determination of the Board of Appeal shall be final and conclusive.

12. On or before the thirty-first day of March, nineteen hundred and twenty-eight, and in each year thereafter, every registered veterinary surgeon who desires to have his name published in the *Gazette* as such shall forward to the Registrar the prescribed fee for such publication, together with the name and address of the applicant and such other particulars as may be required by the Board.

13. (1.) The Registrar shall, in the month of April, nineteen hundred and twenty-eight, and thereafter in the month of April in every year, cause to be published in the *Gazette* a list of the names, with prescribed particulars, of such registered veterinary surgeons as have applied to have their names so published, and have paid the prescribed fee.

(2.) The *Gazette* containing such list shall, unless the contrary is proved, be sufficient evidence in all judicial proceedings that on the thirty-first day of March immediately preceding the date of the *Gazette* every person whose name appears therein as a registered veterinary surgeon was duly registered as such, and also that every such person has continued to be so registered at all times after the said thirty-first day of March and before the date of the next publication in the *Gazette* of the list of registered persons.

14. (1.) Save as provided in the next succeeding subsection, every person commits an offence, and is liable to a fine of twenty pounds, who, not being a registered veterinary surgeon, takes, uses, or adopts the name, title, or description of veterinary surgeon, veterinarian, or veterinary practitioner, or uses or causes to be used in connection with his business, trade, calling, or profession any written words, titles, initials, or abbreviation of words, titles or initials intended to cause or which may reasonably cause, any person to believe that he is a registered veterinary surgeon.

(2.) Any person who has practised as a veterinary surgeon in New Zealand for not less than ten years immediately prior to the commencement of this Act may, notwithstanding that he may not be qualified to be registered under this Act, continue in practice, and may use in connection with his business the designation of "veterinary practitioner," if he lodges his name with the Minister of Agriculture not later than twelve months after the commencement of this Act, and satisfies him that he has been practising as aforesaid and that he is of good character and repute.

(3.) In every prosecution for an offence against this section the burden of proving that the defendant, at the time when the offence was committed, was registered under this Act shall lie upon the defendant.

15. All fees and other moneys paid under this Act shall be paid into the Public Account, and shall form part of the Consolidated Fund, and all expenses incurred in respect of the administration of this Act shall be paid out of moneys to be from time to time appropriated by Parliament for the purpose.

16. The Governor-General may from time to time, by Order in Council, make regulations—

(*a.*) Prescribing forms of application for and certificates of registration under this Act:

(*b.*) Prescribing the fees payable in respect of registration under this Act; and also prescribing fees for the issue of certificates of registration, and for the annual publication in the *Gazette* of the name of any registered veterinary surgeon;

(*c.*) Providing for the appointment of assessors and the conduct of appeals under section eleven hereof:

(*d.*) Generally providing for such other matters as, in the opinion of the Governor-General in Council, are necessary or expedient for the effective administration of this Act.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Jan. 19th—Meeting of the West of Scotland Division at Glasgow.

Jan. 21st—Meeting of the Mid-West and South Wales Division, at Bristol.

Jan. 26th—Meeting of the Scottish Metropolitan Division at the Anatomy Lecture Theatre of the Royal (Dick) Veterinary College.

R.V.C. Rebuilding Fund.

We are glad to be able to announce that already two members of the profession have subscribed £100 each to the above fund, to which extended reference is made elsewhere in our columns. "Follow up!"

Personal.

Marriage.—The wedding took place on Thursday at St. Athan's Church, near Cardiff, of Mr. Harry L. Hobson,

M.R.C.V.S., of the Veterinary Department of the Ministry of Agriculture and Fisheries, only son of Major T. H. Hobson, F.R.C.V.S., of Humberstone Road, Leicester, and Miss Eve Irene Jennings, St. Athans, eldest daughter of Mrs. S. Jennings and the late Mr. T. Jennings. The best man was Mr. Ronald D. Knight, Westfield Road, Leicester, and the officiating clergyman was the Rev. J. S. Longdon. The bride was given away by Mr. A. S. Beecher, and was attended by her sister as the only bridesmaid, Miss G. Jennings. A reception was afterwards held at the Park Hotel.

* * * * *

Will.—Mr. William Thomas Clark, M.R.C.V.S., of Ashworth Mansions, Maida Vale, W., who died on September 28th, aged 72, left estate of the gross value of £18,826, with net personalty £18,378.

In the event of the failure of certain trusts he left the ultimate residue of the property to King Edward's Hospital Fund.

Obituary.

Mr. Percy Scott Falshaw, M.R.C.V.S., Singapore.

"We regret to record the death" says the *Straits Times* "of Mr. Percy Scott Falshaw, M.R.C.V.S., late Government Veterinary Surgeon, which occurred on Friday, December 15th, 1926, at his residence, the Crescent Flats, Tanjong Katong, after a long illness. Coming to Singapore for the late Mr. H. Abrams, he was appointed Government Veterinary Surgeon by Sir Cecil Clementi in 1893, and retired in 1925, after he had spent twelve months on sick leave. He was 57 years of age. Affectionately known as "Pa," Mr. Falshaw was for many years a well-known figure in this Settlement, and in the days when horseflesh was more common than now, his services were in great request. For a time he acted as honorary veterinary surgeon at the local race meetings, and took the greatest interest in racing; he was for years veterinary surgeon to the Municipality. A bluff Yorkshireman, who called a spade a spade, his was a most kindly nature. Many good deeds are to his credit that have never seen the light of day. He was endowed with a developed artistic sense, and was regarded particularly as an expert on pottery; he possessed a keen appreciation of music, and in his earlier days was a violin player. He took an active interest in the amateur theatricals of the early nineties. One of his best rôles was that of the Pirate King in the Pirates of Penzance, produced in 1894. In his early days Mr. Falshaw was a keen member of the Singapore Volunteer Artillery, and he had been for many years a prominent member of the Masonic body. His health failed some two years ago, and this was followed by a seizure which confined him to his flat. A few days ago he suffered a further seizure, ending in his death. The funeral took place on Saturday morning at Bidadari cemetery at 9 o'clock, and was attended by several well-known residents of Singapore, including Dr. A. B. Simpson, Mr. A. H. Todd (representing the Singapore Turf Club), Dr. Rattray, and Mr. Hay-Barclay (Government Veterinary Surgeon). Members of the staff of the Government Veterinary Department were also present. Among several beautiful wreaths was one from the Turf Club. The Colonial Secretary was represented by Mr. A. Hyde, of the Secretariat."

Captain Percival Carter, M.R.C.V.S., Blackburn.

"A former resident of Worthing, where he was a member of the Freemasons' Lodge, died on January 6th, in the person of Captain Percival Carter, M.R.C.V.S.," says the *Sussex Daily News*. "Deceased, who was a director of Messrs. Carter and Sons, lime manufacturers, Blackburn and Clitheroe, died at Claytonledale, Lancs.

"During the war Captain Carter was attached to the 6th Dragoons. He was shell shocked and burst an ear drum, from which he never quite recovered. Formerly, he was a well-known veterinary surgeon at leading agricultural shows. He was educated at Manchester University, and in addition to membership of the Worthing Lodge, was a prominent Preston (Lancs.) Freemason."

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

"A Pulmonary Problem."

To the Editor of The Veterinary Record.

Sir,—I have read with interest Mr. H. L. Jones' article, also the subsequent letter on the subject by Mr. F. W. Chamberlain.

I agree with Mr. Chamberlain that, apart from the subcutaneous emphysema, the case is somewhat typical of traumatic pericarditis: but disagree with both writers as to the source of the air (*i.e.*, from the lung). I think that even if the lung was ruptured or transfixed by a foreign body, it is very improbable that inspired air could escape from the lung acini into the pleural cavity, and thence through the intercostal muscles into the subcutaneous tissue.

I am of the opinion that whatever the cause of the cow's illness, the source of the subcutaneous air was the outer world, and that it was sucked in through a minute skin wound.

In view of the fact that nine days elapsed before the emphysema became evident, it is not impossible that during this period a sharp foreign body passed from the reticulum through the diaphragm, through the intercostal muscles, between the ribs, and finally punctured the skin from within.—Yours faithfully, J. G. Wright.

12 Fitzalan Place, Cardiff.

8th January, 1927.

Professional Advertisements.

To the Editor of The Veterinary Record.

Sir,—I trust that members who advertise in the columns of the *Record* for appointments, will excuse me if I direct attention to and suggest a more dignified method of framing their advertisements. For instance, an advertiser sometimes refers to himself as "reliable and *sober*." It seems to me that personal attributes or references might very well be left to private communication between parties concerned, and it would be more in keeping with a dignified and a correct professional status if old-fashioned customs of advertisement which savour of the stable or domestic service were abolished. I suggest (1) that the box system of "V.R., No. So and So," might be discontinued, and (2) that advertisers might simply give their names and addresses and notify that they are open for engagement, advertisements to read something like the following:—

Locum Tenens. Mr. L. Tenens, M.R.C.V.S., 1 Helpful Avenue, Workham, available from 1st February, 1927.

Assistantship. Mr. R. Graduate, M.R.C.V.S., Page Street, Booktown, desires appointment as assistant, first Fitzwygram: town preferred.

Mr. I. N. Practice, F.R.C.V.S., Pullthrough, requires qualified assistant.

The abolition of the box system would save the Editor's time, and as a number of veterinary surgeons prefer to do locum tenens' work, it becomes only a question of notifying through the advertisement columns when they are available for engagement.—Yours truly, J. Moore.

Hampstead.

7th January, 1927.

Cattle Slaughtered under the Tuberculosis Order.

To the Editor of The Veterinary Record.

Sir,—Since my article which you published in your issue of January 1st, was written, the parent cow mentioned in Case No. 30 has been slaughtered.

No tuberculous lesions could be detected anywhere, thus confirming the tuberculin tests applied to her.—Yours faithfully, J. F. D. Tutt.

1 St. Cross Road, Winchester,

7th January, 1927.

The Editor acknowledges receipt of the following:—

Communications from Messrs. G. Mayall and D. C. Wilkinson.